JMP 9600

TWO CHANNEL JPEG 2000 HD AND 2K VIDEO PLAYERS

Superior Image Quality for High Resolution 2D and 3D Presentations

- JPEG 2000 file playback via HD-SDI or DVI-I
- Plays back content encoded up to 250 Mbps, 12-bit depth, 4:4:4 color sampling
- Dual outputs can operate as two independent sources or as a synchronized output
- Multiple JMP 9600 2K units can lock together for multi-screen applications
- 1080p HD and 2K playback at up to 50/60p
- Genlock input and linear time code input and output, JMP 9600 2K model only

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

Introduction

The **JMP 9600 HD** and **JMP 9600 2K** are high resolution video players that provide 2D and 3D playback of JPEG 2000 encoded video files at up to 250 Mbps. The players are ideal for entertainment and commercial applications where superior image quality is critical to the audience experience.

The JMP 9600 offers two playback channels that can be independently controlled or synchronized for super-widescreen or 3D systems.

Superior JPEG 2000 Compression

JPEG 2000 compression is the superior choice for high resolution image playback. 4:4:4 color sampling and 12-bit color depth provide fine granularity and minimal contouring, a marked improvement compared to MPEG. JPEG 2000 was chosen by the digital cinema industry as the best option for film replacement in commercial cinema presentations.

JMP 9600 2K System Synchronization

The JMP 9600 2K features genlock input and linear time code for synchronization with external equipment and other JMP 9600 2K units. Synchronize playback from two JMP 9600 2K units to create 4K resolution playback.

Front Panel with Confidence Monitor

The front panel provides transport controls, a variable speed shuttle knob and a color LCD that displays the user interface, as well as any video being played. A special “blend” feature allows the operator to superimpose the user interface on top of the moving video background for simultaneous viewing.

Web Browser Access

A Web browser can be used to access all video clips, manage playlists, control playback and transport of the current file, or set up and configure a unit.

1080p HD and 2K playback at up to 50/60p

JMP 9600 2K offers the capability to playback content at frame rates between 23.98 to 60 frames per second supporting the majority of native film and video formats.

Content Storage Options

Standard JMP 9600 models feature 1 TB of hard disk storage capacity. JMP 9600 models using 128 GB solid state storage are available on a build-to-order basis for environments where higher ambient temperatures or vibration may exist.

Multi-channel Audio

JMP 9600 units support up to 16 channels of audio for surround effects or multi-lingual applications.

Applications

The JMP 9600 is ideally suited for large format or immersive displays with digital cinema-grade quality requirements. Well-suited environments include:

- Theaters
- Theme parks
- Arenas
- Museums
- Attractions
- Live Events
- Presentation Suites
- Outdoor Venues
- Tours

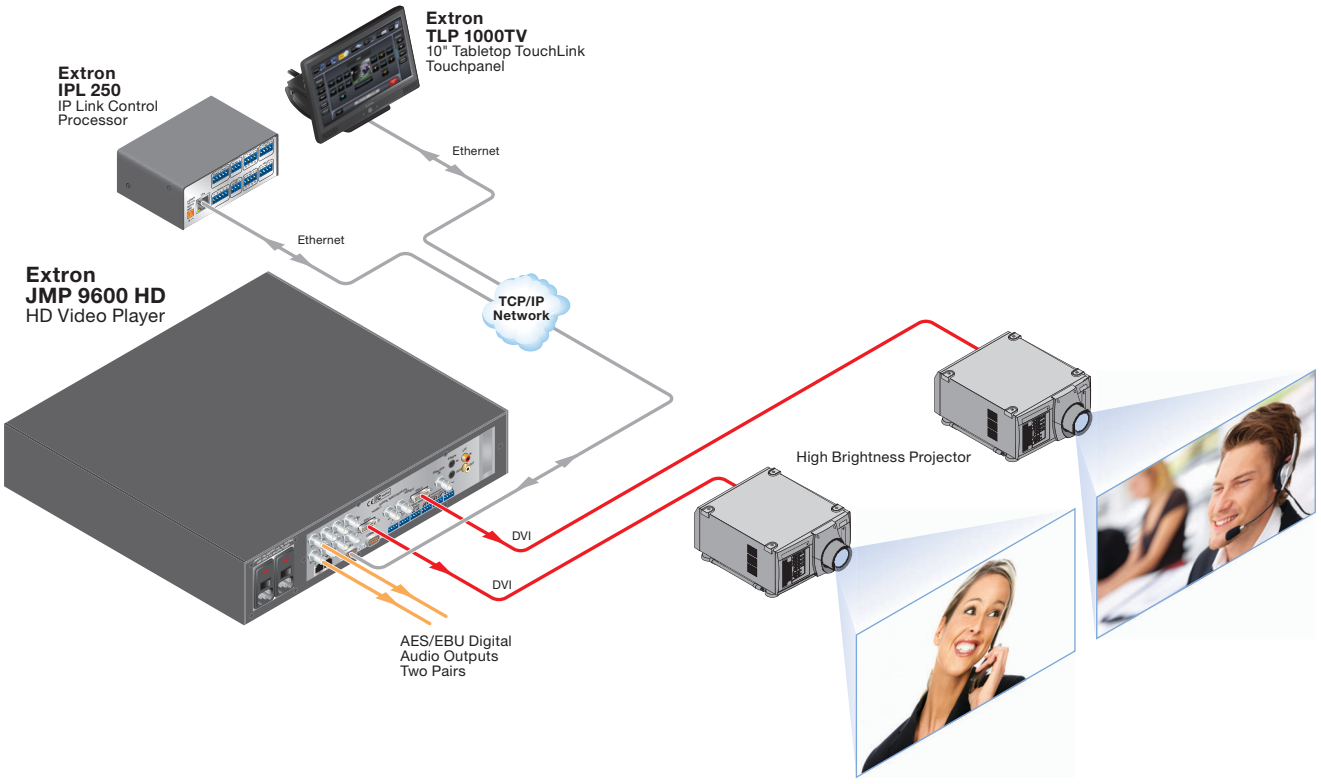
Resolution	Output Connection	Frame Rates	Color Sampling	Maximum Bit Depth	JMP 9600 HD	JMP 9600 2K
1280 x 720p	HD-SDI or DVI-I	48, 50, 59.94, 60	4:2:2	10 Bits	✓	✓
	Dual-Link HD-SDI	48, 50, 59.94, 60*	4:4:4	12 Bits	✓	✓
1920 x 1080i	HD-SDI or DVI-I	25/50i, 29.97/59.94i	4:2:2	10 Bits	✓	✓
	HD-SDI or DVI-I	30/60i	4:2:2	10 Bits		✓
	Dual-Link HD-SDI	25/50i, 29.97/59.94i	4:4:4	12 Bits	✓	✓
	Dual-Link HD-SDI	30/60i	4:4:4	12 Bits		✓
1920 x 1080p	HD-SDI or DVI-I	23.98, 24, 25, 29.97, 30	4:2:2	10 Bits		✓
	Dual-Link HD-SDI	48, 50, 59.94, 60	4:2:2	10 Bits		✓
	Dual-Link HD-SDI	23.98, 24, 25, 29.97, 30	4:4:4	12 Bits		✓
2048 x1080p	HD-SDI or DVI-I	23.98, 24, 25, 29.97, 30	4:2:2	10 Bits		✓
	Dual-Link HD-SDI	48, 50, 59.94, 60	4:2:2	10 Bits		✓
	Dual-Link HD-SDI	23.98, 24, 25, 29.97, 30	4:4:4	12 Bits		✓

***1280x720p 60 dual-link not available on JMP 9600 HD**

JMP 9600 playback support

Application: Single JMP 9600 HD

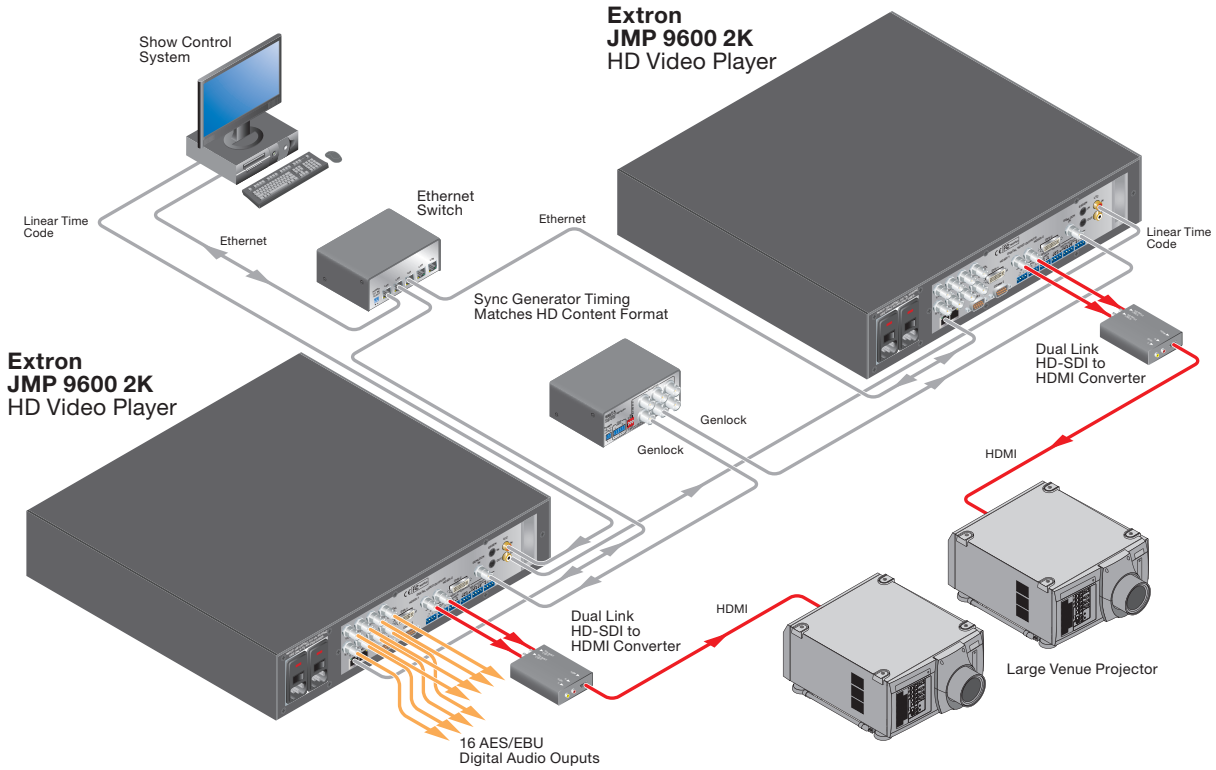
This application features a single JMP 9600 HD supplying two channels for independent or synchronized video playback. Twenty video clips have been prepared and downloaded into the JMP 9600 HD using the standard J2KENC JPEG 2000 encoding software and FTP - File Transfer Protocol. The video clips are JPEG 2000-encoded, 1080p, 24 frame, at 4:2:2 sampling with stereo audio at 125 Mbps per video stream. Two digital audio channels have been encoded to play with each video output on the JMP 9600 HD player. The JMP 9600 HD has one terabyte of storage, allowing it to hold 16 hours of content at this encoded bitrate. An external control system sends Play Start commands to the JMP 9600 HD across the network. The 20 video files are played back synchronized or independently depending on presentation requirements.



Application: Dual JMP 9600 2K at 60p

A single, wide-format projection system consisting of two 2K projectors is required to playback content continuously across a panoramic screen. Two JMP 9600 2K units are configured to playback synchronized 2K content at a combined 4096x1080 resolution. Content has been produced to be two screens wide. The production and editing process has created 4096x1080 material, which is split into two sets of 2048x1080 sequential frames and then is encoded into Digital Cinema Package - DCP files using Extron's J2KENC-PRO JPEG 2000 Professional Software Encoder. Sixteen channels of audio are encoded with the video. The content is loaded on each JMP 9600 2K as 2048x1080 resolution for playback at 60 frames per second at 4:2:2 color sampling using a 250 Mbps bit rate. Dual-link HD-SDI outputs are connected from each JMP 9600 2K to HDMI converters and then to the two large format projectors.

The show control system supplies the linear time code – LTC, providing a common time reference for the JMP 9600 2K players as well as other system elements. An HD sync signal supplies a common reference to the two JMP 9600 2K units so that video playout will be "pixel-locked" between units. The show control system sends Play Start commands to both units and they use the LTC to reference start and end times. A single, continuous image is played back across both screens providing a wide, panoramic presentation. This same type of JMP 9600 2K system synchronization can be used to create 3D or 4K content playback using two JMP 9600 2K units.



Overview

Front Panel Controls
Illuminated soft-touch buttons provide video transport control

Intuitive User Interface
Front panel LCD display and Web interface for remote management

Confidence Monitor
Presents video playback. User can apply Blend, allowing user interface to be superimposed over the video playback

Internal Storage
One terabyte of internal RAID provides up to 16 hours of video storage

Shuttle/Jog Knob
Allows simple navigation for the menu, shuttle, and frame mode

JMP 9600

Power Supplies
Dual redundant power supplies with independent power switches

LTC
Linear Time Code input and loop output

Digital Audio Outputs
16 channels of uncompressed 48 kHz 24 bit broadcast standard

Communication Ports
Dual Ethernet ports and RS-232 port

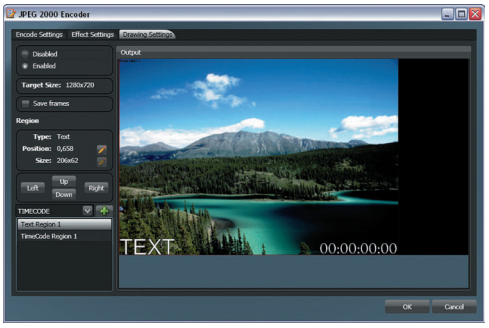
Digital Video Outputs
2 Single Link DVI-I and 2 HD-SDI - Can operate as two independent sources or as a synchronized output

General Purpose I/O
4 Opto-isolated inputs and 4 relay outputs

Genlock
BNC for broadcast reference or 6 pin mini-DIN for internally generated Extron LOCK reference with loop out

ACCESSORIES

Two key accessories are available for JMP 9600 applications. They include JPEG 2000 encoding software and a sync distribution amplifier for multi-player applications.



J2KENC and J2KENC-PRO JPEG 2000 encoding Software

PDA 108 Player Sync Distribution Amplifier

J2KENC and J2KENC-PRO JPEG2000 Encoder Software allows users to prepare HD or 2K video and multichannel audio content for playback in Extron JMP 9600 media players. The software provides a reliable method to encode JPEG2000 video content and prepare Digital Cinema Package - DCP files without using external encoding services.

The LOCK sync reference from one JMP 9600 2K unit can be looped to two additional units. Larger systems can use a PDA 108 Player Sync Distribution Amplifer to supply the LOCK reference signal to eight JMP 9600 2K players. The PDA 108 ensures “pixel locked” playback of produced multi-screen content across multiple JMP 9600 2K units.

Specifications

CONTENT/FILE FORMAT

File types	MXF-wrapped JPEG 2000 in DCP (Digital Cinema Package, unencrypted)
Video formats	
JMP 9600 HD models	1280x720p[5,6,7,8*], 1920x1080i[2,3] [1] = at 24 Hz, [2] = at 25 Hz, [3] = at 29.97 Hz, [4] = at 30 Hz, [5] = at 48 Hz, [6] = at 50 Hz, [7] = at 59.94 Hz, [8] = at 60 Hz (*at 4:2:2 only)
JMP 9600 2K models	1280x720p[5,6,7,8] 1920x1080i[2,3,4], 1920x1080p[1,2,3,4,5,6,7,8], 2048x1080[1,2,3,4,5,6,7,8] [1] = at 24 Hz, [2] = at 25 Hz, [3] = at 29.97 Hz, [4] = at 30 Hz, [5] = at 48 Hz, [6] = at 50 Hz, [7] = at 59.94 Hz, [8] = at 60 Hz
Audio formats	16, 20, or 24 bits, 48 kHz broadcast WAV

NOTE: 1080p signals (1920 and 2048) at rates of 48 Hz and above are dual link HD-SDI only.

VIDEO PROCESSING

Processing	8, 10, or 12 bits per color channel
Data rates	Playback at up to 250 Mbps (125 Mbps per video channel in 2 channel mode)
Standards	ISO/IEC 15444-1 JPEG 2000, 32x32 codeblock

VIDEO OUTPUT

Number/signal type	1 dual link HD-SDI in 4:4:4 or 2 single link HD-SDI in 4:2:2 and 2 DVI or RGBHV in 4:2:2
Connectors	2 female BNC 2 female DVI-I
Standards	Analog RGB, Y Pr Pb output: SMPTE 274M, SMPTE 296M DVI output: SMPTE 274M, SMPTE 296M HD-SDI output: SMPTE 292M (single link), SMPTE 372M (dual link)
Frame rate	Follows the file format.

PLAYER SYNC

External sync in (genlock)	1 Vp-p, bi-level or tri-level
Genlock connectors	1 female BNC (genlock in, black burst) 2 female 6-pin mini DIN (LOCK proprietary genlock in and out, for connection to other JMP 9600 units)

TIME CODE

Signal level	Input impedance: 600 ohms Input level: >100 mVp-p Output level: 1 Vp-p
Rates	
JMP 9600 HD models	1 SMPTE, EBU, film output on a female RCA connector (tip-sleeve)
JMP 9600 2K models	2 SMPTE, EBU, film (input and output) on a pair of female RCA connectors (tip-sleeve)

SYNC — ANALOG VIDEO OUTPUTS

Output type	For analog output: RGBHV
Output level	2.75 V to 3.3 Vp-p, unterminated for RGBHV

DIGITAL AUDIO OUTPUT

Number/signal type	8 AES/EBU (16 channels, unbalanced, uncompressed)
Connectors	8 female BNC

CONTROL — HOST PORTS — JPEG VIDEO PLAYER

Serial host control ports	2 bidirectional RS-232, female 9-pin D connectors: 1 for control, 1 unused
Ethernet host port	2 female RJ-45
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect
Ethernet protocol	ICMP (ping), IP, TCP, DHCP, HTTP, Telnet, FTP
Storage	
JMP 9600 HD, JMP 9600 2K	
Hard drives	(2) 500 GB hard drives, RAID 0
JMP 9600 HD 128, JMP 9600 2K 128	
Solid state drives	(2) 64 GB solid state drives, RAID 0
Program control	MSVPP command set Microsoft® Internet Explorer®, Apple® Safari®, Mozilla® Firefox®, Telnet
Software encoder	J2KENC and J2KENC-PRO

DIGITAL I/O CONTROL

Number/type	4 digital inputs 4 relay outputs (2) 12 VDC outputs
Connectors	

GENERAL

Power supply*	Internal Input: 100-240 VAC, 50-60 Hz *A redundant power supply is included.
Power consumption	70 watts
Temperature/humidity	Operating: +50 to +104 °F (10 to +40 °C) / 10% to 90%, noncondensing
Cooling	Fan. Air flows in from the front and out through the vents in the two sides, as viewed from front panel.
Thermal dissipation	239 BTU/hr
Mounting	
Rack mount	Yes, with included brackets
Enclosure dimensions	3.5" H x 17.0" W x 15.5" D (2U high, full rack wide) 8.9 cm H x 43.2 cm W x 39.4 cm D (Depth excludes connectors and handles. Width excludes rack ears. Width with rack ears is 19.0" [48.3 cm].)
Product weight	23 lbs (10.4 kg)
Regulatory compliance	
Safety	CE, NRTL
EMI/EMC	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
JMP 9600 HD	JPEG 2000 Media Player HD	60-1135-01
JMP 9600 HD 128	JPEG 2000 Media Player HD 128 GB SSD	60-1135-02
JMP 9600 2K	JPEG 2000 Media Player 2K	60-1136-01
JMP 9600 2K 128	JPEG 2000 Media Player 2K 128 GB SSD	60-1136-02

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

Worldwide Sales Offices

Anaheim, CA • Raleigh, NC • Dallas, TX • Washington, DC • London • Paris • Amersfoort, NL
Frankfurt • Dubai • Singapore • Seoul • Shanghai • Beijing • Tokyo • Bangalore

UNITED STATES
+800.633.9876
Inside USA/Canada
+1.714.491.1500

EUROPE
+800.3987.6673
Inside Europe
+31.33.453.4040

ASIA
+800.7339.8766
Inside Asia
+65.6383.4400

MIDDLE EAST
+971.4.2991800

© 2011 Extron Electronics. All rights reserved. All trademarks mentioned are the property of their respective owners. Prices and specifications subject to change without notice.

05-2010
68-1871-01
REV. B